WHAT IS CLAIMED IS:

1. A display system comprising:

a display surface having a three-dimensional convex shape; and

a projection system for projecting an object field onto a continuous image field on an interior of the display surface, wherein a ratio of a longest image distance to a shortest image distance is at least 1.75.

2. The display system of claim 1 wherein the image field subtends an angle of at least 240 degrees.

3. The display system of claim 2 wherein the image field subtends an angle of at least 300 degrees.

4. The display system of claim 2 wherein the display surface is approximately spherical.

5. The display system of claim 4 wherein the display surface is translucent.

6. The display system of claim 2 wherein the display surface includes an aperture, and the image field covers substantially the entire interior of the display surface exclusive of the aperture.

7. The display system of claim 6 further comprising:

a physical support for the display surface, wherein the physical support hides the aperture from view.

8. The display system of claim 6 wherein the projection system has an optical axis that enters the interior of the display surface via the aperture.

9. The display system of claim 8 wherein the optical axis is tilted relative to vertical.

10. The display system of claim 2 wherein the projection system comprises:

a lens system for projecting a virtual object field onto the continuous image field on the interior of the display surface.

11. The display system of claim 10 wherein the projection system further comprises:

a projector optically coupled to the lens system, the projector for projecting the object field onto a flat image field, wherein the object field for the projector is flat and the flat image field for the projector serves as the virtual object field for the lens system.

12. The display system of claim 11 wherein the projector comprises a digital video projector.

13. The display system of claim 11 wherein the projector comprises a slide projector.

14. The display system of claim 11 wherein the projector comprises a movie projector.

15. The display system of claim 11 wherein the projector comprises a projection television.

16. The display system of claim 10 wherein the virtual object field is generated by a projector and the lens system is adapted to be mechanically attached to the projector.

17. The display system of claim 10 wherein the projection system can accommodate display surfaces of varying size by varying a focus of the projector.

18. The display system of claim 2 wherein the display surface comprises multiple materials.

19. The display system of claim 2 wherein the display surface is seamless.

20. The display system of claim 2 wherein the image field is axially asymmetric about an optical axis.

21. The display system of claim 2 wherein the object field is non-circular.

22. The display system of claim 2 wherein the projection system comprises:

a projector that further comprises an integral projection lens system that projects the object field onto the continuous image field on the interior of the display surface, wherein the object field is flat.

23. The display system of claim 22 wherein the object field is flat and an object in the object field includes an electronically controlled display.

24. The display system of claim 22 wherein the object field is flat and an object in the object field includes a film-based display.

25. The display system of claim 2 wherein the display surface is spheroid in shape.

26. The display system of claim 2 wherein the interior of the display surface is reflective.

27. The display system of claim 2 wherein the display surface is approximately in a shape of a rectangular solid.

28. The display system of claim 2 wherein the projection system generates an image suitable for stereoscopic display.

29. A lens system for projecting a virtual, flat object field onto a continuous image field having a three-dimensional convex shape, wherein a ratio of a longest image distance to a shortest image distance is at least 1.75.

30. The lens system of claim 29 wherein the image field subtends an angle of at least 240 degrees of the three-dimensional convex shape.

31. The lens system of claim 30 wherein the image field subtends an angle of at least 300 degrees of the three-dimensional convex shape

32. The lens system of claim 30 wherein the image field is substantially closed around a last clear surface of the lens system.

33. The lens system of claim 30 wherein the image field is approximately spherical.

34. The lens system of claim 30 wherein ray bundles destined for a full-field image point exit a last clear surface of the lens system at an angle that is substantially perpendicular to an optical axis of the lens system.

35. The lens system of claim 30 comprising:

a lens group for correcting chromatic aberration.

36. The lens system of claim 30 comprising:

at least one aspheric surface.

37. The lens system of claim 36 wherein the at least one aspheric surface significantly changes an image distance to an image point, as a function of field height of the image point.

38. The lens system of claim 37 wherein, on the aspheric surface, a footprint of a ray bundle destined for an apex image point does not overlap with a footprint of a ray bundle destined for a full field image point.

39. The lens system of claim 30 comprising:

a lens group with negative power for increasing an exit angle between an optical axis of the lens system and a ray destined for an image point, as a field height of the image point increases.

40. The lens system of claim 39 wherein, within the lens group, a footprint of a ray bundle destined for an apex image point does not overlap with a footprint of a ray bundle destined for a full field image point.

41. The lens system of claim 39 wherein lenses in the lens group have a flat surface around their rims so that the lenses are properly positioned when the flat surfaces contact each other.

42. The lens system of claim 30 comprising, in the following order along an optical axis:

a first lens group located close to an aperture of the lens system, the first lens group correcting for chromatic aberration;

a second lens group that includes an aspheric surface, for significantly changing an image distance to an image point as a function of field height of the image point; and

a third lens group with negative power for increasing an exit angle between the optical axis and a ray destined for an image point, as a field height of the image point increases, wherein the second lens group acts as a partial field lens between the first lens group and the third lens group.

43. The lens system of claim 30 wherein the object field is asymmetric about an optical axis of the lens system.